

70A102720

CONT. ON 0.2 SH.NO. 0.1

F.C.F. 70A102720
FMF: AJH

DATE: 8-4-70

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Sh. No. 0.1

D. Itkin

Issue Date
AUG 14 1970

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SYSTEM SPECIFICATION			
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70A102721

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SYSTEM SPECIFICATION

CONT. ON 1.0.1 SK. NO. 1.0

GENERAL NOTES

F.C.F. 70A102720

FMF: AJH

APPROVED BY:

D. Itkin

DATE: 7-27-70

REVISION STATUS

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REISSUED

LS:SOE

PROCESS

COMPUTER
PHOENIX, ARIZ.

Dwg. No. 70A102721
Cont. on 1.0.1

Sh. No. 1.0

Made By

D. Itkin

Issue Date

4 1990

70A102721

CONT ON SHEET 1.1

SH NO. 1.0.1

REV NO.	TITLE
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System Description Index

1.0 System Description

1.1 Installation Background

1.2 Computer Application

1.3 Hardware and Software

1.4 System Block Diagram

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		Sun Studs, Inc.	

REVISIONS

1.0 System Description

1.1 Installation Background

The GE-PAC 30 computer will be installed in the Sun Studs, Inc. new Stud Mill located at Roseburg, Oregon.

1.2 Computer Application

The computer will control the chipping and sawing functions of an automated "Stud" sawmill. Scan data for the logs and subsequently produced cants will be given to the computer from an external scan system data processor. The computer will utilize the furnished data to calculate an optimum cut cylinder and then direct chipper heads, band mill saws, carriage positioning and speed to produce the desired number and sizes of cants. The required cant chipping will be controlled by the computer utilizing the furnished data from the Cant Photoelectric scanner.

1.3 Hardware and Software

1.3.1 Hardware

Item	Model No.	Qty.	Description
1	30-02	1	Control Processor
2	30-21	1	HRDW MPY/DIV and BLK I/O
3	30-23	1	Power Fail Det.
4	30-24	1	Auto Restart

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1.3 Hardware and Software

1.3.1 Hardware (continued)

<u>Item</u>	<u>Model No.</u>	<u>Qty.</u>	<u>Description</u>
5	30-30	1	Memory Protect
6	31-16	1	32K Bytes of core memory
7	38-10	2	System Cabinet
8	38-21	1	Expansion Chassis
9	38-30	1	Power Supply Expansion
10	34-00	1	ASR35 Interface
11	34-50	1	ASR35 Teletype
12	34-06	1	H.S. Paper Tape Reader Interface
13	34-56	1	H.S. Paper Tape Reader
14	36-20	6	16-Sense Line Modules & Interface
15	36-51	4	16-Control Line Modules & Interface
16	36-10	3	8-line Interrupt Module & Interface
17	36-70	3	Byte I/O Module
18	36-80	1	Digital I/O Multiplexor
19	36-83	1	128-Point Output Module
20	36-88	2	32-Relay Closure Panel
21	36-00	1	60 Hz Clock

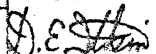
1.3.2 Software

A total effort of 21 man-months of programming is required.

1.4 System Block Diagram

A block diagram of the system is shown in Figure 1.0

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TITLE

SYSTEM DESIGN SPECIFICATION

FIRST MADE FOR Sun Studs, Inc.

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SH NO.

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REVISIONS

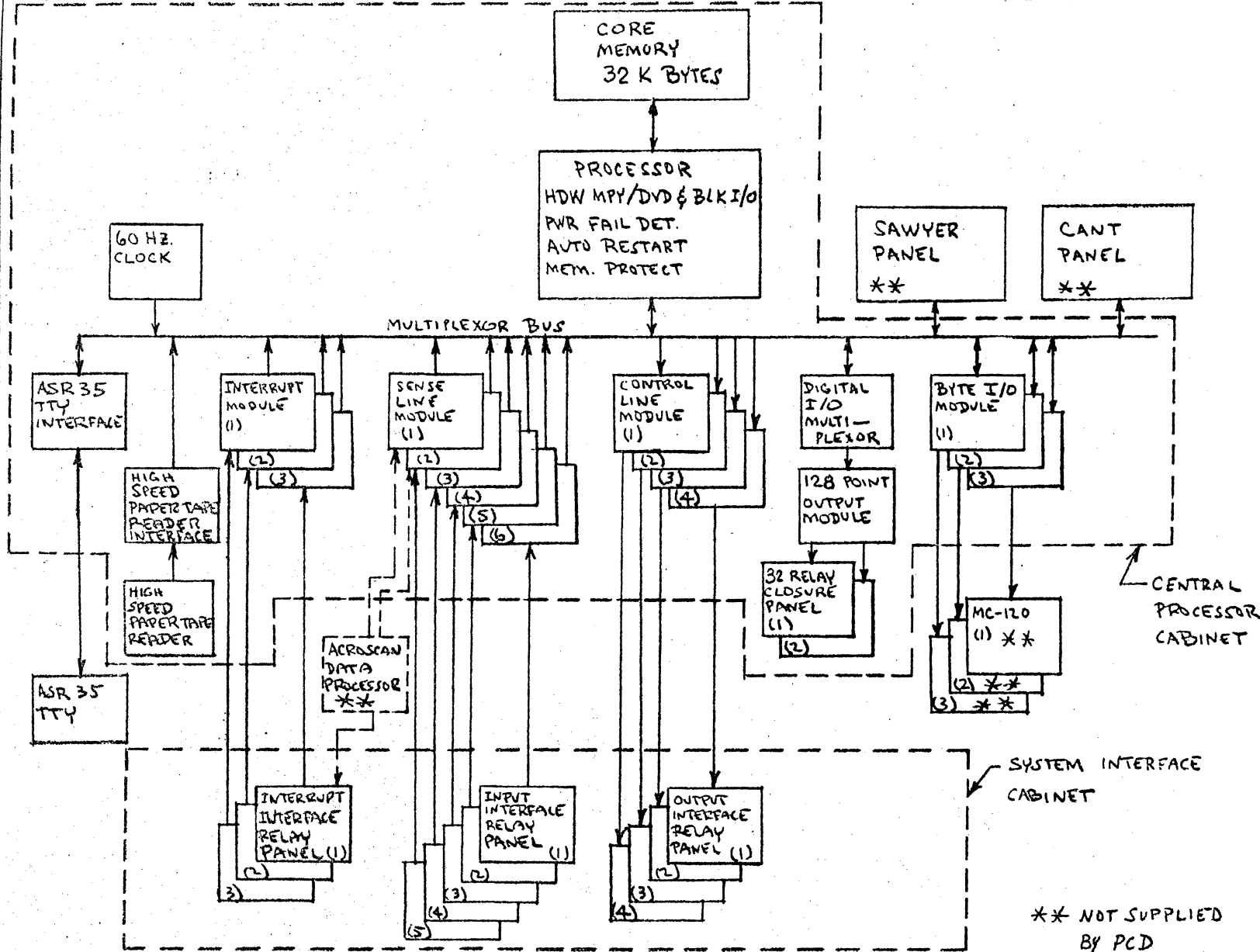


FIGURE 1.0 SYSTEM BLOCK DIAGRAM

PRINTS TO

SH NO. 1.3

CODE IDENT NO.

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PCD

LOS ANGELES DISTRICT

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70A102722

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D. Itkin/Res.

SYSTEM SPECIFICATION

SUN STUDS, INC.

A J H

CONT. ON 2.1

SH.NO.2.0

GENERAL NOTES

F.C.F.

FMF:

APPROVED BY:

D. Itkin.

DATE: 8-4-70

REVISION STATUS

REISSUED

1550E

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D. Itkin

Issue Date

AUG 14 1970

PROCESS

COMPUTER
PHOENIX, ARIZ.

Dwg. No. 70A102722

Cont. on 2.1

Sh. No. 2.0

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SCOPE INDEX

- 2.0 Scope
- 2.1 Contractural Documents
- 2.2 Responsibility
- 2.3 System Documentation

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2.0 Scope

The extent of Process Computer Department activity with regard to this requisition is delineated below.

2.1 Contractural Documents

Sun Studs, Inc, has signed a Class IV sales agreement for a GE-PAC 30 computer system.

Pertinent documents relating to the requisition are as follows:

- 1) Customer specifications as continuously revised and finalized July 15, 1970. (H.C. Mason & Associates Project #346)
- 2) Proposition number 482-35397
- 3) Requisition number 471-54354-1
- 4) Contract number 76994
- 5) SID number AJH

2.2 Responsibility

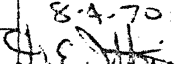
Process Computer Department will provide computer hardware and software to meet the requirements of the system as described in the applicable Sales Agreement and System Specifications. The hardware and software provisions are detailed in Section 5 and 3 of the System Specifications, respectively.

2.3 System Documentation

The System Documentation will consist of the applicable Instruction Books, Maintenance Manuals, Software Manuals, System Specification and Pertinent Miscellaneous drawings.

The distribution of the System Documentation will be per the applicable Class IV Sales Agreement as follows:

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SYSTEM SPECIFICATION			REVISIONS
2.3.1 <u>Documentation to Customer</u>			
The following documentation shall be sent to:			
Sun Studs, Inc. c/o Mr. Jon Walker P.O. Box 1127 Roseburg, Oregon 97470			
1) One (1) copy of each of applicable Instruction Books, Maintenance Manuals, and Software Manuals.			
2) Three (3) copies each of all pertinent miscellaneous drawings except the System Specification.			
3) Three (3) copies each of the following System Specification drawings			
70A102723			
70A102724			
70A102726			
70A102727			
2.3.2 <u>Documentation to others</u>			
2.3.2.1 The following shall be sent to the indicated locations in the amounts listed for each location			
1) All applicable miscellaneous drawings for the System			
2) System Specifications DWG. NOS. 70A102820 through 70A102728			
a) 2 copies to L. Ford, I&SE, GE Co. P.O. Box 909 Portland, Oregon 97207			
b) 1 copy to H. Coon, ISD, GE Co. P.O. Box 909 Portland, Oregon 97207			
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ISSUED 8/3/70	APPROVALS 84-70 S.E. Itkin	PCD	70A102722
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70A102722

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70A102725

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SYSTEM SPECIFICATION

CONT. ON 5.1 SH.NO. 5.0

GENERAL NOTES

F.C.F. 70A102720

FMF: AJH

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P-17-70

APPROVED BY: R. Preisig

DATE: 8-1-69

REVISION STATUS

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REISSUED

ISSUED 10-15-69

B AUG. 25-1970

Made By

A. P. Marchena

Issue Date

10-15-69

PROCESS

COMPUTER
PHOENIX, ARIZ.

Dwg. No. 70A102725

Cont. on 5.1 Sh. No. 5.0

Sh. No. 5.0

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5.0

HARDWARE INDEX

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- 5.1 CABINET INFORMATION
- 5.2 DESCRIPTION OF STANDARD EQUIPMENT
- 5.3 NUMERICAL CONTROL DRIVE & INTERFACE
- 5.4 INTERCABINET CABLES
- 5.5 TEST CABLES
- 5.6 PROCESS OUTPUTS AND INTERFACE
- 5.7 PROCESS INPUTS AND INTERFACE
- 5.8 PROCESS INTERRUPTS AND INTERFACE
- 5.9 SYSTEM CARD FILE AND DEVICE ARRANGEMENT.
- 5.10 CABINET ARRANGEMENT

PRINTS TO

MADE BY	APPROVALS	PCD	DIV OR DEPT.	70A102725
A. P. Marchena	<i>RPL</i>			
ISSUED	10-14-69	LOS ANGELES DISTRICT	LOCATION	CONT ON SHEET 5.3
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NO.

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SYSTEM SPECIFICATION

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FIRST MADE FOR Sun Studs, Inc.

AJH

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5.1 HARDWARE INFORMATION

- a. The computer system hardware will be housed in two standard GE/PAC 30 cabinets. Each cabinet shall have the following dimension: 70" high, 24.19" wide and 32.25" deep.
- b. Ultimately these cabinets will be installed at the customer site bolted to each other as shown in paragraph 5.12. However, for shipment purposes, each cabinet will be shipped as a unit.
- c. External cable communication with this cabinet complex will be done thru the cabinets lower rear entry.
- d. Interconnecting cables between cabinets will be plug connected at least at one end. On site connections of intercabinet cables to terminal boards should be avoided.
- e. The Process Computer Department will supply the following system cables:
 1. Intercabinet signal and power cables
 2. Computer cabinet to customer outlet power cable.
 3. Computer to Teletype data cable.
 4. Teletype power cable to customer outlet.
 5. Data cables to three MC-120 numerical control machines which are located near the computer system complex as shown in paragraph 5.10.
- f. Cabinetry and Teletype paint and finishing requirements will be PCD standard equipment finishing.
- g. Formal site arrangement will not be prepared by PCD.

PRINTS TO

MADE BY

A: Marchena

ISSUED

8-12-70

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8-12-70

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LOCATION

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REV NO.	TITLE SYSTEM DESIGN SPECIFICATION	
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5.2 DESCRIPTION OF STANDARD EQUIPMENT

A. PROCESSOR

MODEL NO. QUANTITY

1) CENTRAL PROCESSOR - HIGHER PERFORMANCE

PREWIRED FOR TWO CONTROLLER CARDS

30-02 1

AND PROGRAMMERS CONSOLE CARD.

B. PROCESSOR OPTIONS

1) HARDWARE MULTIPLY/DIVIDE AND BLOCK I/O

FOR 30-02 PROCESSOR

30-21 1

2) POWER FAIL DETECT FOR 30-02 PROCESSOR

30-23 1

3) AUTOMATIC RESTART FOR 30-02 PROCESSOR

30-24 1

4) HARDWIRED MEMORY PROTECT

30-30 1

5) CLOCK

36-00 1

C. CORE MEMORY

1) 32K BYTES WITH PARITY

31-17 1

(8K BYTES IN BASIC CHASSIS, 24K BYTES IN 38-21 CHASSIS)

D. MEMORY INPUT/OUTPUT

(NONE)

E. BULK MEMORY

(NONE)

F. PERIPHERALS

1) ASR 35 INTERFACE

34-00 1

2) ASR 35 TELETYPEWRITER

34-50 1

3) HIGH SPEED PAPERTAPE READER INTERFACE

34-06 1

4) 300 CH/SEC PAPER TAPE READER

34-56 1

G. OTHER PERIPHERAL INTERFACES

(NONE)

REVISIONS

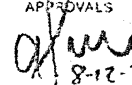
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5.2 DESCRIPTION OF STANDARD EQUIPMENT (cont)	MODEL NO.	QUANTITY	REVISIONS
H. <u>SYSTEM MODULES-ANALOG</u> (NONE)			B
I. <u>SYSTEM MODULES-DIGITAL</u> <u>DIGITAL INPUTS</u> 1) SENSE LINE MODULES FOR 16 SENSE LINES 36-20 6 2) 8 LINE INTERRUPT MODULES 36-10 3 <u>DIGITAL OUTPUTS</u> 1) CONTROL LINE MODULES-16 BUFFERED CONTROL LINES 36-51 4 <u>DIGITAL I/O MODULES</u> 1) BYTE INPUT/OUTPUT MODULES-DATA AND CONTROL FOR 8 LINES 36-70 3 2) DIGITAL I/O MULTIPLEXER CONTROLLER 36-80 1 3) OUTPUT MODULE 36-83 2 4) RELAY CLOSURE PANEL 36-88 2			
J. <u>COMMUNICATION MODULES</u> (NONE)			
K. <u>CABINETS, EXPANSION CHASSIS, POWER SUPPLY</u> 1) SYSTEM CABINET TO HOUSE BASIC AND EXPANSION CHASSIS (3 TOTAL) 38-10 1 2) EXPANSION CHASSIS-PREWIRED FOR 24K BYTES MEMORY, PLUS 5 CONTROLLER CARDS SLOTS 38-21 1 3) EXPANSION CHASSIS-PREWIRED FOR 13 CONTROLLER CARDS 38-23 1 4) POWER SUPPLY EXPANSION 38-30 1			

MADE BY A. P. Marchena	APPROVALS 	PCD DIV OR DEPT.	70A102725 CONT ON SHEET 5.6 SH NO. 5.5
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FIRST MADE FOR SUN STUDS INC. AJH

5.2 DESCRIPTION OF STANDARD EQUIPMENT (Con't)

L. ADDITIONAL CABINETS

- 1) SECOND SYSTEM CABINET TO HOUSE ADDITIONAL
HARDWARE REQUIRED. THIS CABINET WILL HAVE THE SAME
OUTSIDE DIMENSIONS AND GENERAL APPEARANCE OF SYSTEM
CABINET SPECIFIED IN PARAGRAPH 5.2.K.1. (38-10).

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5.3 NUMERICAL CONTROL DRIVE AND INTERFACE

1. THE GE/PAC 30 CENTRAL PROCESSOR WILL CONTROL THREE (3) MARK CENTURY 120 NUMERICAL POSITIONING CONTROL MACHINES, MODEL II, TWO-MOTION DIRECTORS.
2. THE GE/PAC 30 COMPUTER WILL COMMUNICATE WITH THESE MACHINES USING THE BYTE I/O* MODULES FOR DATA TRANSFER AND DATA CONTROL (ONE MODULE PER MACHINE).., AND THE INTERRUPT MODULE FOR MACHINE CONTROL, THROUGH AN INTER-FACE-TERMINATION PACKAGE.
3. REQUISITION ENGINEERING WILL HAVE THE RESPONSIBILITY TO DESIGN AND IMPLEMENT THE INTERFACE-TERMINATION PACKAGE AND POWER SUPPLY IF REQUIRED.
4. REQUISITION ENGINEERING WILL DEVELOP AND ISSUE THE SPECIFICATIONS FOR THE MODIFICATIONS OF THE MARK CENTURY 120 MACHINES.
5. THE HARDWARE REQUIRED FOR THE IMPLEMENTATION OF THIS INTERFACE-TERMINATION PACKAGE WILL BE HOUSED IN THE SECOND SYSTEM CABINET ORDERED ELSEWHERE IN THIS SPECIFICATION.
6. PCD WILL FURNISH THE CABLES NEEDED TO CONNECT THE INTERFACE-TERMINATION PACKAGE TO THE MARK CENTURY 120 MACHINES.

* BYTE I/O MODULES HAVE BEEN SPECIFIED FOR THIS FUNCTION, HOWEVER, THEY MAY BE ELIMINATED OR SUBSTITUTED IF NECESSARY IN ORDER TO ACHIEVE A MORE EFFICIENT INTERFACE DESIGN.

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5.3 NUMERICAL CONTROL DRIVE AND INTERFACE(Cont'd)

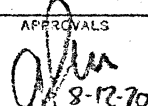
7. THE CABLE LENGTHS WILL BE AS FOLLOWS:

<u>COMPUTER</u>	<u>MC-120 N°</u>	<u>LENGTH (IN FEET)</u>
CABINET #2	#1	8
CABINET #2	#2	11
CABINET #2	#3	14

NOTE THAT ABOVE DIMENSIONS INDICATE CABLE LENGTHS FROM NUMERICAL CONTROL MACHINES TO LOWER REAR ENTRY OF SYSTEM CAB.

8. TWO COMPUTER INTERRUPTS ORIGINATED FROM EACH OF THE THREE MARK CENTURY 120 NUMERICAL CONTROL MACHINES WILL BE RELAY BUFFERED. THE RELAY COIL WILL BE 24 VOLTS DC.

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ISSUED	8-12-70	LOS ANGELES DISTRICT	
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SH NO. 5.9

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SYSTEM SPECIFICATION
FIRST MADE FOR Sun Studs, Inc.
AJH

5.4 Intercabinet Cables

PCD will supply all intercabinet cables and terminations including daughter cables termination to the relay interface panels.

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5.5 Test Cables

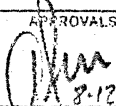
PCD will supply mating connectors and pigtail type cable extensions, 6 feet in length, for the following devices daughter cables.

DEVICE	NUMBER OF CABLE EXTENSION SETS
8 Line Interrupt Module	3
Sense Line Module	6
Control Line Module	4
32 Relay Panel 36-88	2

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MADE BY A. Marchena	APPROVALS 	PCD	DIV OR DEPT.	70A102725
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5.6.0 Process Outputs and Interface

5.6.1 The computer system will consist of a total of one hundred and twenty-eight (128) contact closures.

Sixty-four (64) contact closures will be generated from four (4) Control Line modules and sixty-four (64) contact closures will be generated from the Digital I/O Multiplexor through two, 32 relays, chassis.

5.6.2 The outputs from the Control Line modules will require special computer-process interfacing. Requisition Engineering will design and build the required number of interfacing relay panels to accommodate the 64 contact closures from the Control Line modules. The relay contacts will have the appropriate AC arc suppression for 117V AC and a contact rating of 100 VA. These relay chassis will be mounted in the system cabinet.

5.6.2.1 Four sets of digital displays will be driven from the computer, under program control, in BCD code, using thirty-six (36) of the above mentioned relay outputs. PCD will furnish the necessary wiring, termination, power supply, diode boards and digital indicators required to display the following numerical information on customer operator panels supplied by others, PCD will not supply the interconnecting cables between the system cabinet and the digital displays.

a) One three-digit display to be mounted by others on customer's Cant panel. The left most unit will

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		Sun Studs, Inc.	

REVISIONS

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5.6.2.1 (continued)

indicate digits 0 thru 7. The other two display units will indicate digits 0 thru 9. A total of eleven (11) output relays will be used to drive this display.

b) One (1) three-digit display same as a) above except that this display will be mounted by others on customer's Sawyer Panel.

c) Two (2) two-digit displays to be mounted by others on customer's Sawyer Panel. The left most unit of each two-digit display will indicate digits 0 thru 7. The remaining display unit will indicate digits 0 thru 9. A total of fourteen (14) output relays will be used to drive these displays.

5.6.2.2 The remaining 28 relay interfaced output contacts from the Control Line module drives will be used for process functions. The customer will supply and switch 117V AC power thru these relay contacts.

5.6.3 Two chassis, with 32 relays each, driven from the Digital I/O Multiplexor controller will be mounted on the rear rack of the computer cabinet. These output contacts will be used for process functions. The customer will supply and switch 117V AC power through these relay contacts therefore, these relay contacts shall have contact arc suppression in order to reduce electrical interference to a minimum within the computer cabinet.

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FIRST MADE FOR	Sun Studs, Inc.
	AJH

REVISIONS

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5.7.0 Process Inputs and Interface

5.7.1 The computer system will sense a total of ninty-six (96) digital inputs through six (6) Sense Line modules.

5.7.2 Twenty-three (23) inputs will be read directly into the Sense Line module from equipment built and supplied by others. This equipment will possibly be mounted in the upper part of the computer cabinet..

A daughter board cable and part of a second daughter board cable from the sense line modules (see System Specifications, Section 6, drawing number 70A102726, for bit assignment) will be dressed and terminated to an amphenol connector MS3106A28-21P. This cable should terminate to mating connector MS3102A28-21S on the above mentioned equipment supplied by others.

5.7.3 The remaining seventy-three (73) inputs will necessitate special signal conditioning.

Requisition Engineering will design and build the interface required to condition process signal levels to Sense Line module input levels. This interface will consist of relays, a connector to terminate daughter board cables from the Sense Line modules and terminal boards for customer's signal cable termination.

This interface hardware will be mounted in the system cabinet.

5.7.3.1 The computer digital input interface relay coil rating will be 117V AC., $\pm$ 10V. The customer will supply the power to activate relay coils.

5.7.3.2 Some of these inputs will sense pushbuttons and thumb-wheel switches contact closures located on two customer

PRINTS TO

MADE BY	A. Marchena	APPROVALS	PCD	DIV OR DEPT.	70A102725
ISSUED	8-12-70	8-12-70	LOS ANGELES DISTRICT	LOCATION	CONT ON SHEET 5.14 SH NO. 5.13

REV NO.	TITLE		CONT ON SHEET 5.15	SH NO. 5.14
	SYSTEM SPECIFICATION			
CONT ON SHEET	SH NO.	FIRST MADE FOR Sun Studs, Inc.	AJH	
5.7.3.2 (continued) panels built by others (see drawing 70A102726 for bit assignment). Cable connections will be furnished by the customer.			REVISIONS	
			B	
MADE BY			70A102725	
A. Marchena				
ISSUED			DIV GR	
8-12-70			DEPT.	
APPROVALS			PCD	
			LOS ANGELES DISTRICT	
8-12-70			LOCATION	
			CONT ON SHEET 5.15	
			SH NO. 5.14	
			PRINTS TO	

REV NO.	TITLE	CONT ON SHEET	SH NO.
	SYSTEM SPECIFICATION	5.16	5.15
CONT ON SHEET	SH NO.	FIRST MADE FOR	AJH
		Sun Studs, Inc.	

REVISIONS

B

5.8.0 Process Interrupts and Interface

5.8.1 The computer system will accept a total of twenty-four (24) process interrupts using three (3) Eight Line Interrupt modules. Two (2) interrupts will be brought indirectly into the Interrupt module from customer's equipment possibly mounted in the computer cabinet. Six (6) interrupts will originate at the Mark Century controllers and the remaining sixteen will be generated by the process. Panels required for signal interface and customer cable terminations will be mounted in the System cabinet.

5.8.2 Two (2) interrupt signals are originated at the customer equipment mentioned in paragraph 5.7.2. These interrupt signals will be picked up at the Amphenol connector specified in paragraph 5.7.2 and terminated on the proper Eight Line Interrupt module as indicated in System Specification, Section 6, drawing number 70A102726.

5.8.3 Six (6) interrupt lines, two (2) from each of Mark Century numerical control unit, will be connected to an 8 line Interrupt module.

The numerical control machine interrupt signal voltage level is 24V DC., therefore, Requisition Engineering will design and build the required interface to condition these signals in order to be compatible with 8 Line Interrupt module input signal voltage level.

PCD will supply the cable interconnecting the numerical control machines to the interrupt interface.

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ISSUED	8-12-70	8-12-70	LOS ANGELES DISTRICT LOCATION	CONT ON SHEET	5.16
				SH NO.	5.15

REV
NO.

TITLE

SYSTEM SPECIFICATION

CONT ON SHEET

SH NO.

FIRST MADE FOR Sun Studs, Inc.

AJH

REVISIONS

B

5.8.4 Sixteen (16) interrupt input points will be used by the process switching 117V AC. Requisition Engineering will design and build the required interface to condition these process signal levels in order to be compatible with the 8 Line Interrupt module input signal voltage level.

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A. Marchena

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LOS ANGELES DISTRICT

LOCATION

CONT ON SHEET 5.17

SH NO. 5.16

CODE IDENT NO.

REV. NO.	TITLE	CONT ON SHEET	SH NO.
	SYSTEM SPECIFICATION		
CONT ON SHEET	FIRST MADE FOR		
	Sun Studs, Inc.	AJH	

5.9 System Card File and Device Arrangement

The basic computer chassis, memory expansion chassis and I/O device expansion chassis will be arranged as shown on the sketch below. Digital output multiplexor and computer power supplies are also shown.

Slot	DEV #	38-23 CHASSIS	DEV #	30-02 CHASSIS	DEV #	38-21 CHASSIS
25	1B	CONTROL LINE MOD #3	03	HSPTR	08	BYTE I/O MOD #0
24	1A	CONTROL LINE MOD #2	02	TTY	30	INT MOD #3
23	19	CONTROL LINE MOD #1	01	NOT USED	29	INT MOD #2
22	18	CONTROL LINE MOD #0		CONTROL 3	28	INT MOD #1
21	0D	DIGITAL I/O MULT. #0		NOT USED	27	CLOCK
20	15	SENSE LINE MOD #5		CONTROL 2	04	MEM SWITCH
19	14	SENSE LINE MOD #4		BIT SLICE		NOT USED
18	13	SENSE LINE MOD #3		NOT USED		CORE MEM
17	12	SENSE LINE MOD #2		CONTROL 1		CORE MEM
16	11	SENSE LINE MOD #1		NOT USED		CURRENT DRIVER
15	10	SENSE LINE MOD #0		CONTROL 0		MEM SWITCH
14	0A	BYTE I/O MOD #2		RMIC		NOT USED
13	09	BYTE I/O MOD #1		DROM		CORE MEM
12				ROM		CORE MEM
11				PMIC		CURRENT DRIVER
10				MEM. SWITCH		MEM SWITCH
9				NOT USED		NOT USED
8				CORE MEM		CORE MEM
7				CORE MEM		CORE MEM
6				CURRENT DRIVER		CURRENT DRIVER
5				MEM PROT & PARITY		NOT USED
4						NOT USED
3						NOT USED
2						NOT USED
1						NOT USED
0						NOT USED

FRONT

POWER
SUPPLY

POWER
SUPPLY

TWO
36-83's

36-88
RELAY
PANEL

36-88
RELAY
PANEL

BLOWER

CABINET
REAR

MADE BY	A. Marchena	APPROVALS	PCD
ISSUED	8-12-70	8-12-70	
		LOS ANGELES DISTRICT	LOCATION
		DIV OR DEPT.	70A102725
		CONT ON SHEET	5.18
		SH NO.	5.17

TITLE

SYSTEM SPECIFICATION

CABINET ARRANGEMENT

FIRST MADE FOR SUN STUDS INC.

AJH

SH NO.

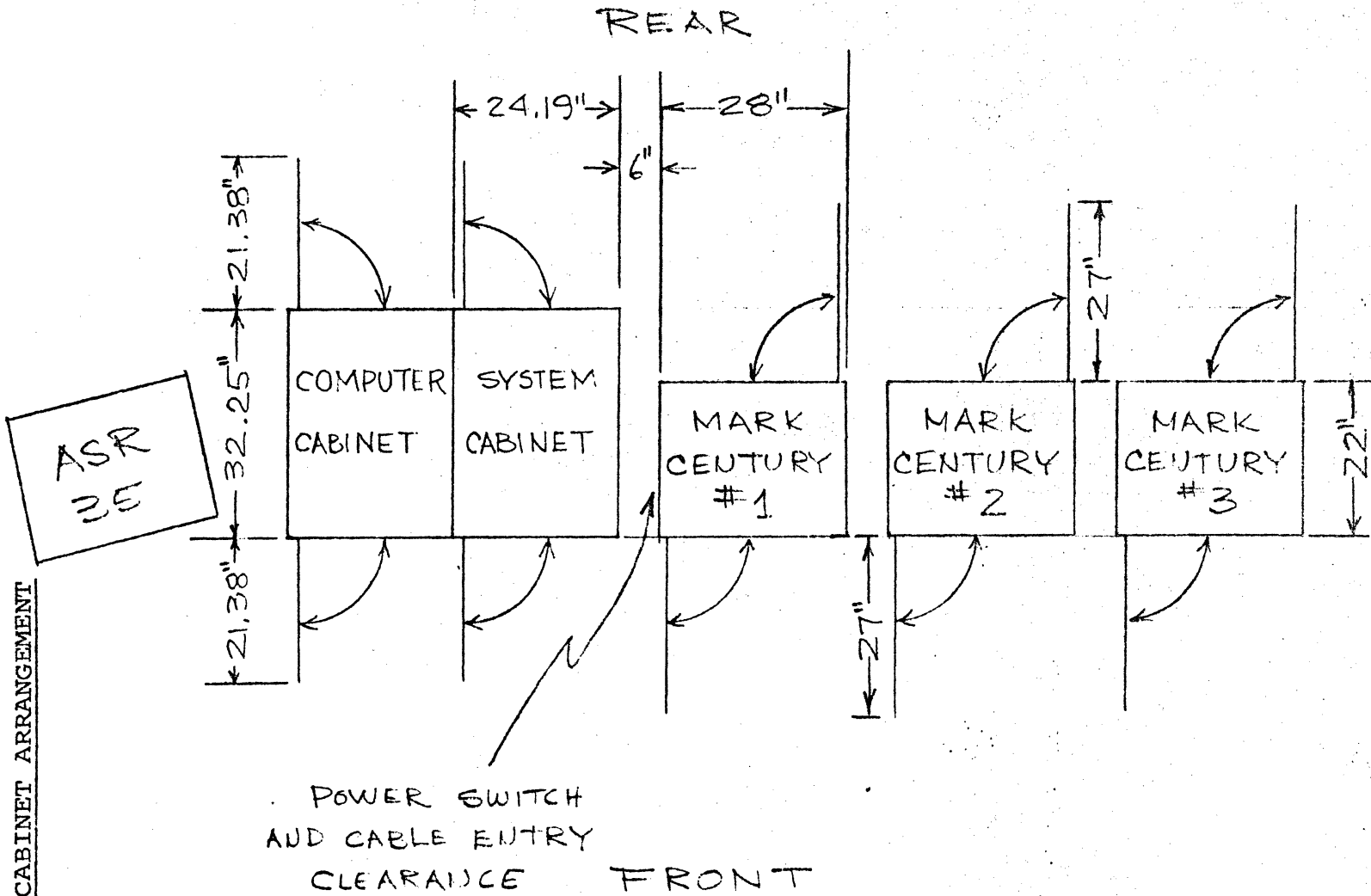
CONT ON SHEET

5.10

CABINET ARRANGEMENT

REVISIONS

B



PRINTS TO

MADE BY A. P. Marchena

ISSUED 10/14/69

APPROVALS

10-14-69

PCD

DIV OR DEPT.

WESTERN REGION

CONT ON SHEET F

70A102725

SH NO. 5.10

REV NO.	TITLE		CONT ON SHEET 6.1.0 SH NO. 6.0.1
	SYSTEM SPECIFICATION		
CONT ON SHEET	SH NO.	FIRST MADE FOR Sun Studs, Inc.	AJH

6.0 I/O SUMMARY INDEX

- 6.1 DEVICE PRIORITY ASSIGNMENT SUMMARY
- 6.2 COMPUTER INPUTS
- 6.3 COMPUTER INTERRUPTS
- 6.4 COMPUTER OUTPUTS

REVISIONS

PRINTS TO

MADE BY D. Itkin	APPROVALS 10-20-70 <i>D.E. Itkin</i>	PCD	DIV OR DEPT.	70A102726
ISSUED OCT 14 1970	LOS ANGELES DISTRICT		LOCATION	CONT ON SHEET 6.1.0 SH NO. 6.0.1

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING -				
APPLIED PRACTICES	SURFACES	STRENGTHS IN TENSILE STRESS	STRENGTHS IN COMPRESSIVE STRESS	STRENGTHS IN SHEAR STRESS
	✓	+	+	+

TITLE
SYSTEM INTERFACE LOGIC

FIRST MADE FOR AJH
ECF: 4DP0005A AJH

[illegible][illegible]

PROPRIETARY INFORMATION OF
GENERAL ELECTRIC COMPANY

[illegible]

14 SEP 77 141670	NSA	PROC COMP	70C180190
15 SEP 77	1-12-70	PHOENIX	

2

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5

GENERAL ELECTRIC

70C180190

Z 1

APPLIED PRACTICES	PORTALS	TIME	TEMP	DATE
✓	✓	✓	✓	✓

TABLE OF CONTENTS

PRINT MADE FOR AJH

TABLE OF CONTENTS

SYSTEM BLOCK DIAGRAM	SH. 2
I/O TERMINATION PANELS:	
SENSE LINE INTERFACE	SH. 3
CONTROL LINE INTERFACE	SH. 4
INTERRUPT LINE INTERFACE (UNIT 0)	SH. 5
INTERRUPT LINE INTERFACE (UNIT 1)	SH. 6
AC BUFFERED INT. PANEL	SH. 7
I/O CABINET POWER	SH. 8

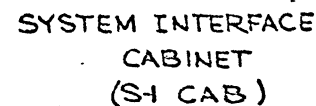
PROPRIETARY INFORMATION OF
GENERAL ELECTRIC COMPANY

REVISIONS	PRINTS TO

70C180190
JAN 15 1970

PROC COMP
PHOENIX

70C180190
Z 1



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1. SHEET NUMBERS SHOWN IN I/O PANEL BLOCKS (IN S-1 CAB) REFER TO LOGIC FOR THAT PANEL.
2. CUSTOMER MOUNTED WITHIN C-CAB.

SENSE LINE MODULE INTERFACE

FIRST MADE FOR AJH

SENSE LINE
MODULE
REF:
FUNCTIONAL
SCHEMATIC
*70B113242

APPLIED PRACTICES	SURFACES	TEMPERATURE	WINDS
✓	✓	✓	✓

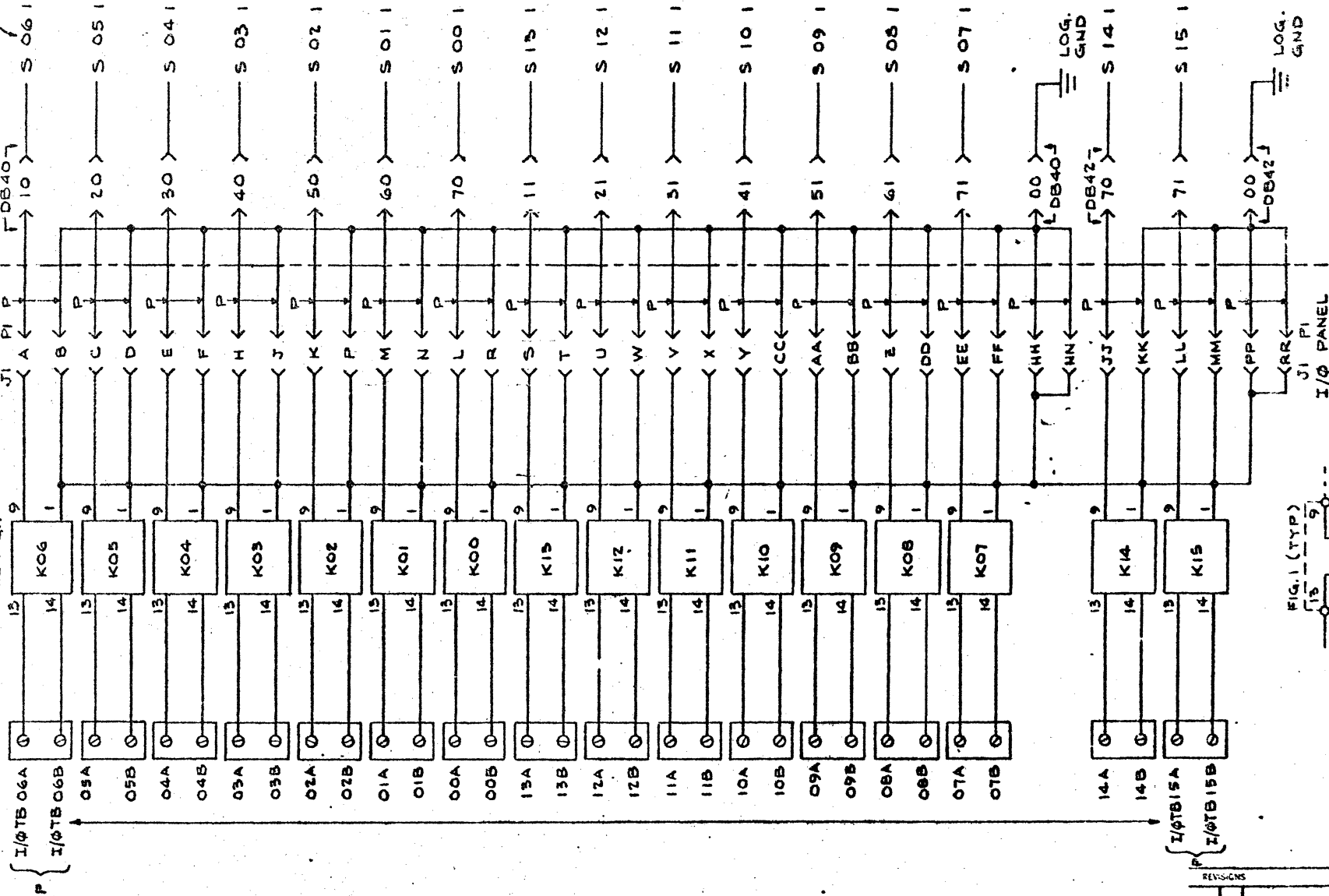
RELAY BUFFER PANEL

SENSE LINE MODULE

SIGNAL NAME
AS LISTED IN
SENSE LINE
MOD.F.S.*

SEE FIG. 1

I/O PANEL

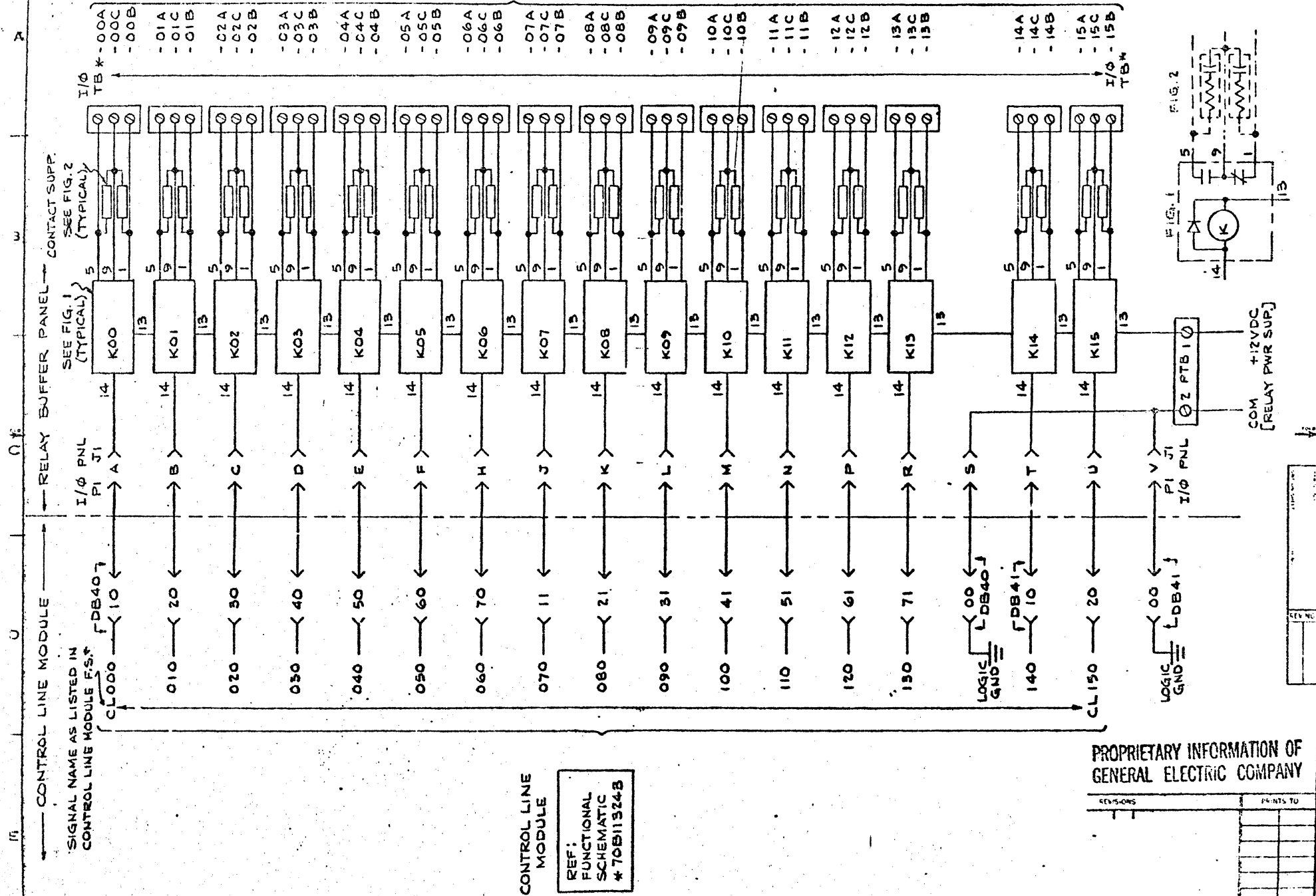


CONTROL LINE MODULE INTERFACE

FIRST MADE BY AJH

APPLIED PRACTICES	SURFACES	TESTING	REVISIONS	DATE
✓				

CUST. TERM.



CONTROL LINE MODULE

REF: FUNCTIONAL SCHEMATIC *70B11324B

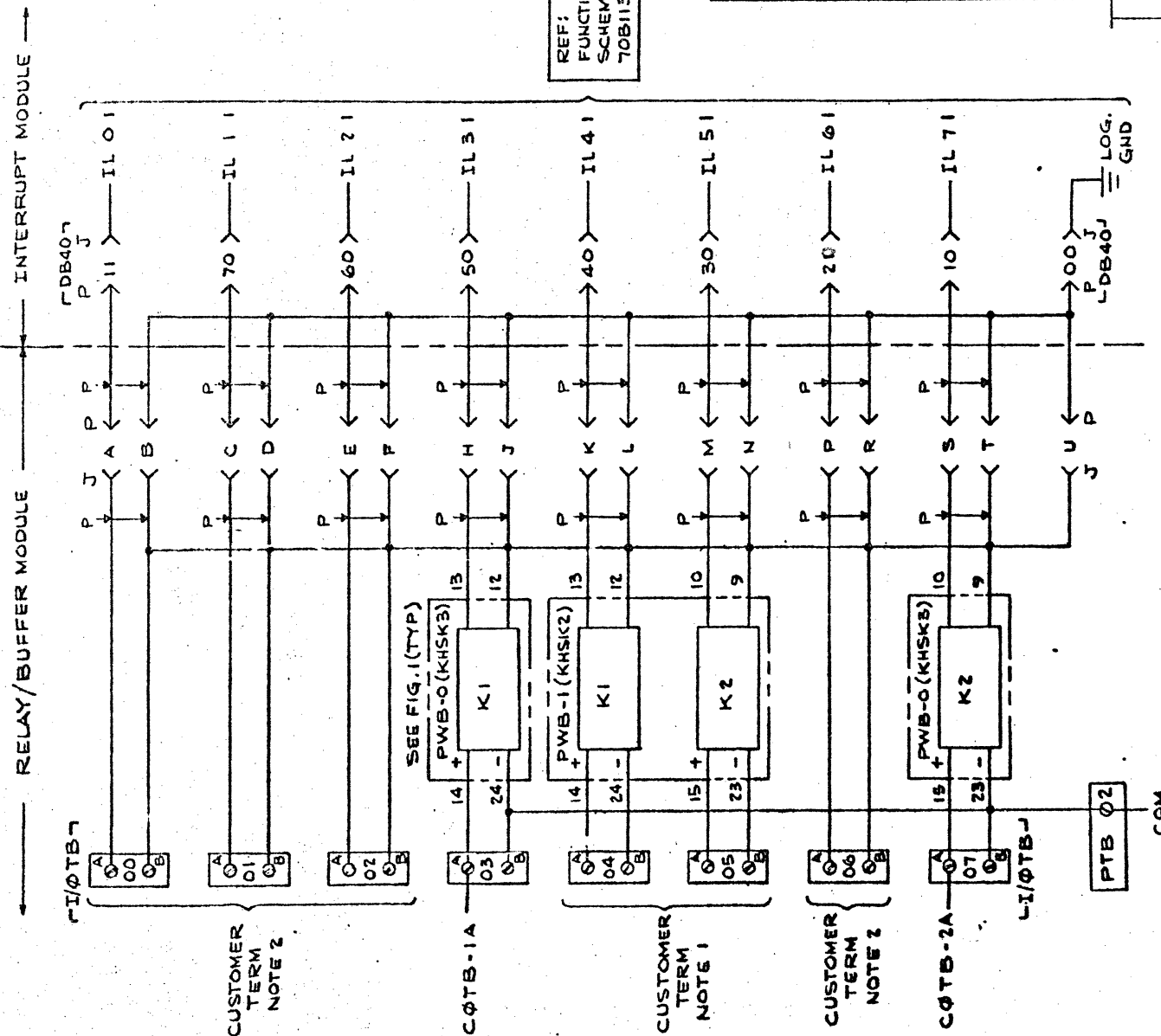
PROPRIETARY INFORMATION OF GENERAL ELECTRIC COMPANY

8 LINE INTERRUPT MODULE
INTERFACE (UNIT 0)

FIRST MADE FOR AJH

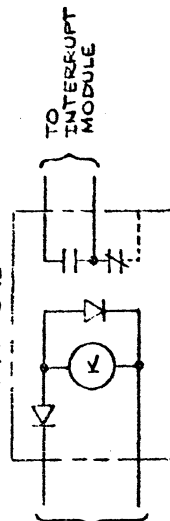
REF:
FUNCTIONAL
SCHEMATIC
70B113380

APPLIED PRACTICES	SURFACES	CHARACTERISTICS	TESTS	REMARKS
	✓			



NOTES:

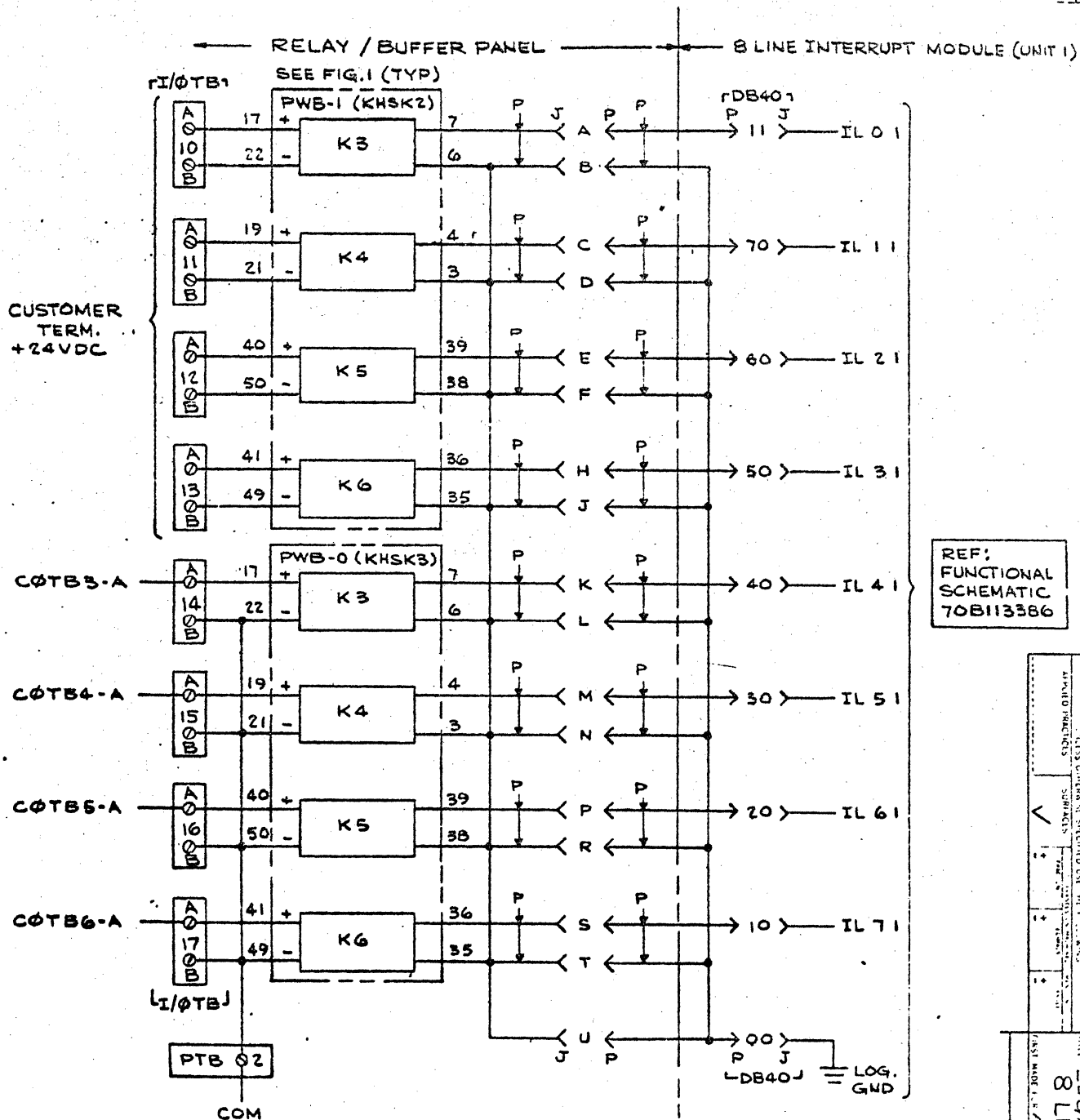
1. PWB-0 (RELAY COIL +12VDC), PWB-1 (RELAY COIL +24VDC).
2. +5V = FALSE. 0V = TRUE FOR API.

FIG. 1
TYPICAL

SEE NOTE 1

PROPRIETARY INFORMATION OF
GENERAL ELECTRIC COMPANY18 NOV 69
JAN 15 1970PROC COMP
PHOENIX

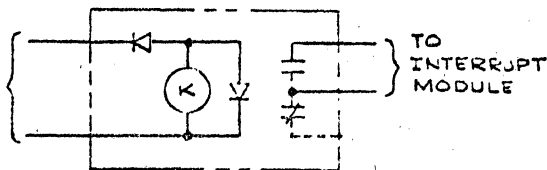
70C180190



NOTES:

1. PWB-0 (RELAY COIL +12VDC),
PWB-1 (RELAY COIL +24VDC),
2. +5V = FALSE,
0V = TRUE FOR API,

SEE NOTE 1



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GENERAL ELECTRIC
8 LINE INTERRUPT MODULE
INTERFACE (UNIT 1)

22-1180190-1
22-1180190-2
22-1180190-3
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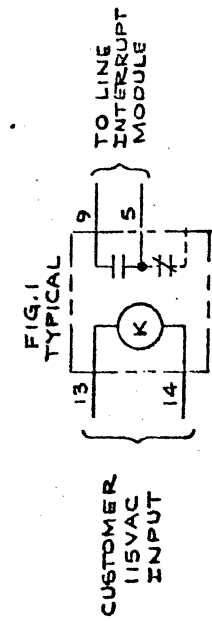
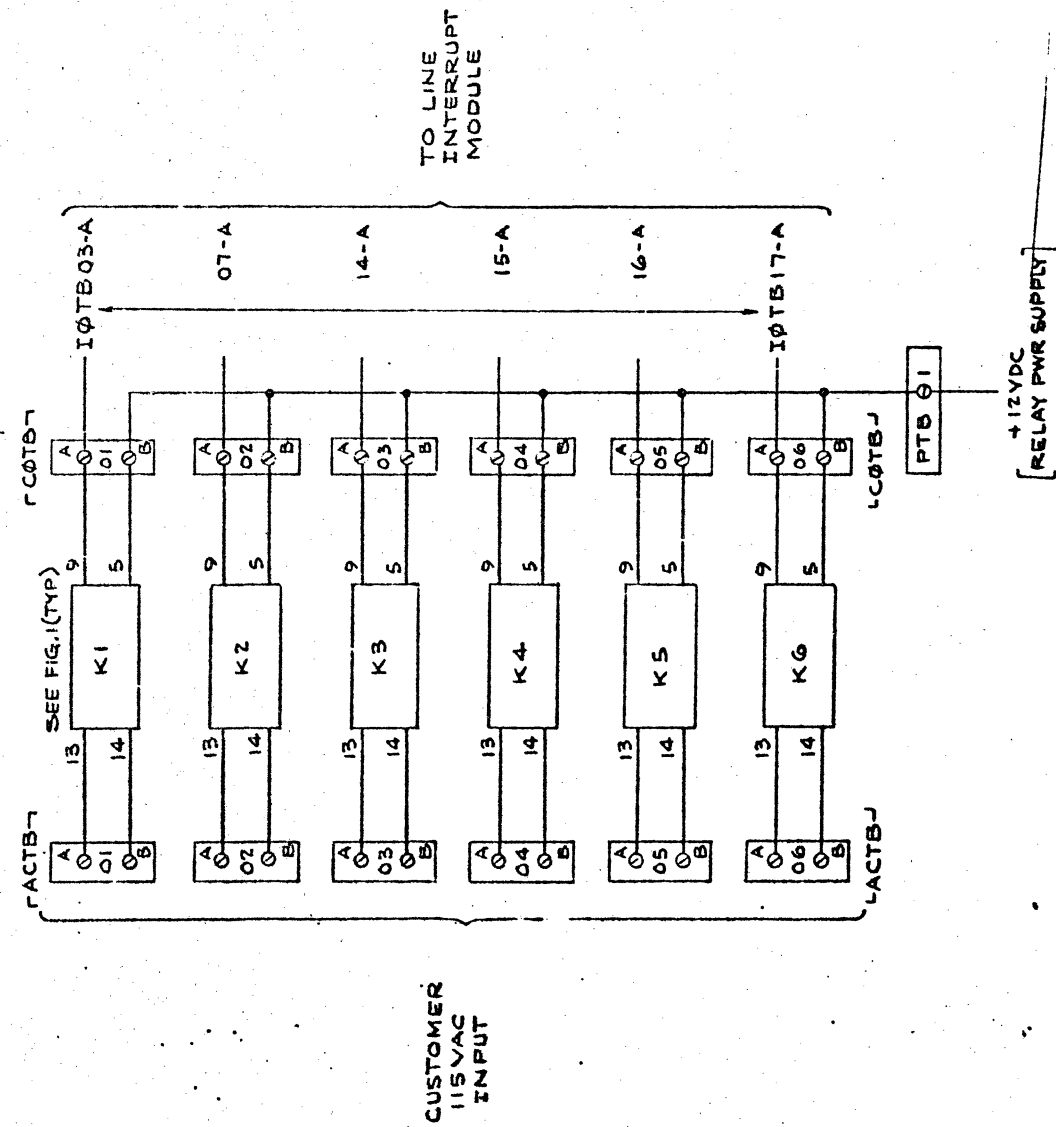
UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING			
APPLIED PRACTICES	SURFACES	TERMINALS	WIRING
	✓	+	+

GENERAL ELECTRIC

70C180190

AC INTERRUPT BUFFER PANEL

FIRST MADE IN U.S.A.



PROPRIETARY INFORMATION OF GENERAL ELECTRIC COMPANY

19 NOV 69

PROCESS COMPUTER PHOENIX

70C180190

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GENERAL ELECTRIC

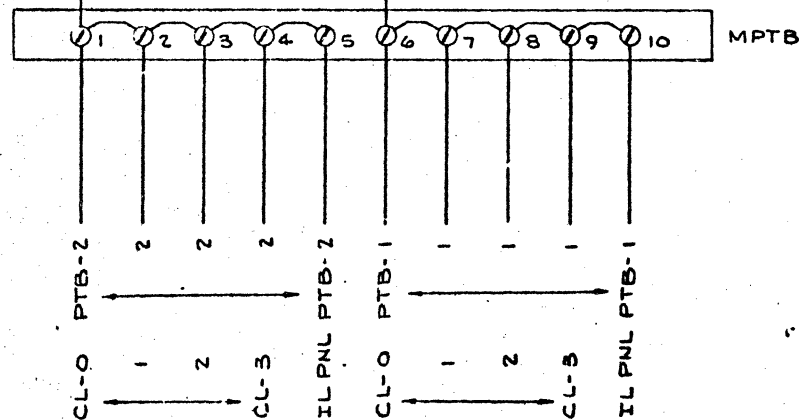
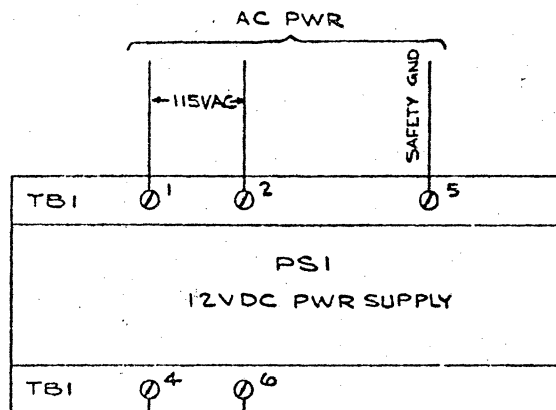
70C180190

APPLIED FACILITIES

✓

MADE IN U.S.A.

I/O CABINET POWER



PROPRIETARY INFORMATION OF
GENERAL ELECTRIC COMPANY

REVISIONS

7 JAN 70
JAN 15 1970

PROCESS COMPUTER
PHOENIX

70C18019
F 15

TITLE INDEX FIELD AIDS		FCF 70X106452	GENERAL ELECTRIC PROCESS COMPUTER		PL 70X106451	SECT 5	ISSUED	1	2

ITEM NO.	REV CODE	IDENTIFICATION NO.	DESCRIPTION	ZONE	GROUP NO. AND QUANTITY								ROUTING
					73	77	73	77	73	77	73	77	
000A			FMF AJH										N
001		70C180190	SYSTEM INTERFACE LOGIC		X								Z-2
002A		PCP-176	MANUAL, SCHEMATIC										N
003A		PCP-177	MANUAL, SCHEMATIC										N
004A		02-011F01	MANUAL, SCHEMATIC										N
005A		70B113344	SCHEMATIC										N
006A		70B113366	SCHEMATIC										N
007		70B113243	CONTROL LINE MOD, SCHEM		X								Z-2
008		70B113239	BYTE I/O MODULE, SCHEM		X								Z-2
009		70B113242	SENSE LINE MODULE, SCHEM		X								Z-2
010		70A110047	30-2 PROCESSOR PROD SPEC		X								Z-2
011		70A110403	HS ARITH&I/O PROD SPEC		X								Z-2
012		70A110866	PWR FAIL SAFE DECT CONTR		X								Z-2
013		70A110167	30-2 AUTO START PROD SPE		X								Z-2
014A		70A111179	PRODUCT SPEC.										N
015		70A110048	31-02, 03, 12, 13 PROD SPEC		X								Z-2
016A		70A111185	PRODUCT SPEC.										N
017		70A110086	TTY SYSTEMS PRODUCT SPEC		X								Z-2
018		70A110855	HSPTR UNI CONTR PROD SPE		X								Z-2
019A		70A111418	PRODUCT SPEC.										N
020A		70A111199	PRODUCT SPEC.										N
021		70A110860	SENSE LINE MOD PROD SPEC		X								Z-2
022		70A110858	CONTR LINE MOD PROD SPEC		X								Z-2
023		70A110396	BYTE I/O MOD PROD SPEC		X								Z-2
024A		70A111217	PRODUCT SPEC.										N

REVISIONS	1	01/19/70	AN	AN	AN	AN	AN
MADE BY	TEMPLETON		01 15 70	APPROVAL	02 02 70	DISTRIBUTION CODE	K6-2
PL 70X106451		SECT 5	SECT 5	SAL NO	1	CONT ON	2

TITLE INDEX FIELD AIDS		FCI 70X106452	GENERAL ELECTRIC PROCESS COMPUTER		PL 70X106451	SECT 5	NO 2	CONT ON 3
						ISSUED		SHEET

ITEM NO.	REV CODE	IDENTIFICATION NO.	DESCRIPTION	ZONE	GROUP NO. AND QUANTITY										COORDINATE	ROUTING
					73	77	73	77	73	77	73	77	73	77		
025		70A110864	S CHASSIS PROD SPEC		X											Z-2
026A		70A111218	PRODUCT SPEC,												N	
027		70A111219	PWR SUPPLY EXP PROD SPEC		X											Z-2
028A		PCP175	MAINTENANCE SPEC												N	
029A		70A111228	MAINTENANCE SPEC.												N	
030A		70A111240	MAINTENANCE SPEC.												N	
031A		70A111241	MAINTENANCE SPEC.												N	
032A		70A111245	MAINTENANCE SPEC.												N	
033		70A111091	BYTE I/O MOD MAINT SPEC		X											Z 2
034A		70A111257	MAINTENANCE SPEC.												N	
035A		70A111121	INSTALLATION SPEC.												N	
036		70A110043	POWER FAIL SAFE INSTL		X											Z 2
037		70A110044	AUTO RESTART 30-2 INSTL		X											Z 2
038		70A110025	BYTE I/O MOD, TEST PROCDR		X											Z 2
039		70A110045	16 BIT MEM INSTL SPEC		X											Z 2
040		70A111131	33,35 ASR/KSR INSTL SPEC		X											Z 2
041A		70A111133	INSTALLATION SPEC.												N	
042A		70A111425	INSTALLATION SPEC.												N	
043A		70A111197	INSTALLATION SPEC.												N	
044A		70A111154	INSTALLATION SPEC.												N	
045A		70A111158	INSTALLATION SPEC.												N	
046A		70A111162	INSTALLATION SPEC												N	
047		70A111118	EXPANSION CHASSIS INSTAL		X											Z 2
048A		70A110851	INFORMATION DWG.												N	
049A		PCP-125A	INFORMATION DWG												N	

REVISIONS	01/15/70	AN	AN	AN	AN	AN
MADE BY	TEMPLETON	01	15	70	APPROVAL	DATE ISSUED
		MO	DAY	YR	WSN	02 02 70
						DISTRIBUTION CODE
						K6-2
						PL 70X106451
						SECT 5
						NO 2
						CONT ON 3
						SHEET

TITLE INDEX FIELD AIDS		FCI 70X106452	GENERAL ELECTRIC PROCESS COMPUTER		PL 70X106451	SECT 5	SM NO 3	CONT ON 4
					5	ISSUED		SHEET

ITEM NO.	REV CODE	IDENTIFICATION NO.	DESCRIPTION	ZONE	GROUP NO. AND QUANTITY								ROUTING
					73	77 73	77 73	77 73	77 73	77 73	77 73	77 73	
030A		PCP-185	INFORMATION DWG		1								N
051		70A110426	SENS LINE MOD, TEST PRCDR	X									Z-2
052		70A110849	CONTROL LINE MOD INFORMA	X									Z-2
053		70A111118	EXPANSION CHASSIS INSTAL	X									Z-2
054		70A111258	PWR SUP 230V CONVER INFO	X									Z-2
055A		06-003	TEST TAPE										N
056A		06-004	TEST TAPE										N
057A		06-016	TEST TAPE										N
058A		06-018	TEST TAPE										N
059A		06-045	TEST TAPE										N
060A		06-041	TEST TAPE										N
061A		06-017	TEST TAPE										N
062A		06-040	TEST TAPE										N
063		70A111601	MOD 30-2 TEST SPEC	X									Z-2
064		70A110706	MEMORY PROTECT TEST SPEC	X									Z-2
065		70A110795	TELETYPE INTERF TEST SPE	X									Z-2
066		70A110018	TELETYPE SYS, TEST SPEC	X									Z-2
067		70A110798	HSPTR INTERFACE TEST SPE	X									Z-2
068A		70A111287	TEST SPEC										N
069A		70A111266	TEST SPEC										N
070		70A110807	SENSE LINE MOD, TEST SPEC	X									Z-2
071A		70A111270	TEST SPEC										N
072A		70A111272	TEST SPEC										N
073		70A110811	POWER SUPPLY TEST SPEC	X									Z-2
074		70A110073	SPR PTS, 30-2, OPTION 1	X									Z-2

REVISIONS		A 01/15/70		AN		AN		AN		AN		AN	
MADE BY		YEMPLETON		APPROVAL		DATE ISSUED		DISTRIBUTION CODE		PL 70X106451		SECT 5	
8		01 15 70		HSN		02 02 70		K6-2		5		ISSUED	
		MO DAY YR		MO DAY YR		MO DAY YR				5		SHEET	

TITLE		INDEX FILE AIDS		FCI 70X106452		GENERAL ELECTRIC PROCESS COMPUTER		PL 70X106451		SECT.		SH. NO. 4		CONT. ON F					
ITEM NO.		REV CODE		IDENTIFICATION NO.		DESCRIPTION		ZONE		GROUP NO. AND QUANTITY								ROUTING	
075				70A110096		SPR PTS, LEV3 MEM PAR/PRO		X								Z 2			
076				70A110095		SPR PTS, 4K 8K MEM W/OPAR		X								Z 2			
077				70A110083		SPR PTS, TTY CNTRLR, LVL 3		X								Z 2			
078				70A110100		SPR PTS, TP RDR UNI-DIRCT		X								Z 2			
079				70A111294		SPR PTS, 8 LINE INTERRUPT		X								Z 2			
080				70A110687		SPR PTS, REL CLOS MODULE		X								Z 2			
081				70A111295		SPR PTS, BYTE I/O MODULE		X								Z 2			
082A				70A111299		SPARE PARTS										N			
083A				PCP-129		PROGRAM LIST										N			

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